

REMARKS

This Amendment is submitted in response to the Office Action dated June 8, 2007. The Office Action rejected claims 11, 14-16, 18-23 under 35 U.S.C. §103. Claim 11 is amended herein. Claims 22-24 have been cancelled without prejudice or disclaimer. Applicants believe the rejections are improper or have been overcome for at least the reasons below. The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing.

The Office Action rejects claims 11, 13-16 and 18-19 under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,695,564 to Imahashi ("Imahashi") in view of JP 10-214682 to Tanamura et al. ("Tanamura") and U.S. Patent No. 4,492,180 to Martin ("Martin"). Of these rejected claims, claim 11 is the sole independent claim. Claim 11 has been amended to recite, at least in part, an apparatus for manufacturing an organic electroluminescence display, wherein the organic material layers include a hole injection layer, a hole transfer layer, and a light emitting layer formed in a predetermined pattern and at predetermined thicknesses for each emitting color, and wherein a thickness of at least one of the hole injection layer and the hole transfer layer varies with respect to a color of light emitted from the associated light emitting layer.

In certain organic electroluminescence devices, it is known that the material for the light emitting layers should be provided separately because different materials are necessary for each of the different colors. However, other of the organic layers (e.g., a hole transfer layer and a hole injection layer) are provided as a common layer for each of the three RGB colors because the same material is used for all of the colors. In such a device, each common layer has a thickness that is the same for each of the RGB subpixels. Accordingly, the thickness of such common layers can not be varied for each of the RGB subpixels.

However, according to the presently claimed apparatus for manufacturing an organic electroluminescence display, certain of the organic material layers such as the hole transfer layer and/or the hole injection layer are separately provided for in each of the RGB subpixels. That is, in the presently claimed first formation unit, the different organic layers for a first light emitting color can be separately formed in each of the different vacuum processing chambers at a predetermined thickness by vapor depositing organic materials according to the colors of light emitted. (See also, Specification, [0052]). After the mask is realigned in the alignment chamber

connecting the first formation unit to the second formation unit, the different organic layers for a second light emitting color can be separately formed in each of the different vacuum processing chambers at predetermined thicknesses, where the thickness of at least one of the organic material layers (i.e., the hole transfer layer or the hole injection layer) for the second light emitting color are different from the thicknesses of at least a corresponding organic material layers for the first light emitting color. Therefore, according to the presently claimed apparatus for manufacturing an organic electroluminescence display, because the thickness of the organic layers can be varied from one emitting color to another, the distance between a first electrode and a second electrode can be varied to accommodate for the different wavelengths of the emitted light.

Applicants respectfully submit that Imahashi, Tanamura and Martin do not teach or suggest the features of the presently claimed invention, even assuming that they are properly combinable. For example, the references do not disclose or suggest varying the thickness of at least one of the organic material layers with respect to a color of light emitted, as recited in amended claim 11. The Office Action admits that Yamazaki does not disclose this feature. (See, Office Action, pg. 13).

Moreover, contrary to the assertion on page 13 of the Office Action (i.e., "Applicant arguments are persuasive but Tanamura discloses varying of thickness of each layers from one emitting color to another"), Tanamura does not disclose or suggest this feature. According to the English language translation of Tanamura, the Tanamura reference generally relates to equipment and methods for manufacturing thin film light emitting devices. (See, Tanamura, [0001]). It appears from Fig. 1 of Tanamura that the apparatus includes a plurality of vacuum processing chambers 22-26, and a plurality of robotic mechanisms 22b-26b located in housings 22a-26a, where each housing is adjacent to each processing chamber 22-26. The substrate is transferred serially from chamber to chamber by the robotic mechanisms 22b-26b through connecting chambers 22c-26c. Tanamura discloses varying the thickness of a hole injection layer (e.g., 20 nm in Example 1, [0071]), with respect to a hole transportation layer (e.g., 60 nm in Example 1, [0073]) and the electronic transportation layer (e.g., 75 nm in Example 1, [0075]) for an individual light emitting unit. However, Tanamura fails to disclose or suggest varying the thickness of one of these organic material layers with respect to a color of light emitted.

According to the English language translation of Tanamura generated from the Japanese Patent Office website, Tanamura does not mention a multicolored or RGB device, and does not disclose or suggest that a thickness of a particular organic layer could or should be changed from device to device, much less according to a color of light emitted, as recited in amended claim 11. Therefore, for at least this reason, Tanamura fails to cure the deficiencies of Imahashi.

In addition, as previously argued, Tanamura fails to disclose a first formation unit and a second formation unit, each unit including a plurality of vacuum processing chambers. Indeed, each 'formation unit' in Tanamura (e.g., 22, 22a, 22b and 22c) only corresponds to or includes one processing chamber (e.g., 22).

Moreover, Tanamura does not disclose an alignment chamber as part of this apparatus, much less a second alignment mechanism for changing the alignment between the substrate and the mask, and for detachably attaching the substrate and the mask again, and a second formation unit including a plurality of vacuum processing chambers for sequentially forming the organic material layers on the substrate at a second color position, as recited in amended independent Claim 11. Also, Tanamura fails to disclose a second alignment mechanism that is provided to connect the first formation unit and the second formation unit in series, as recited in amended claim 11. Instead, Tanamura only discloses empty transfer chambers 22c-26c. The Office Action cites to paragraph [0071] of Tanamura for alleged support of an alignment chamber. However, this paragraph merely appears to mention that the "substrate 1 is installed on the metal mask arranged beforehand." (See, Tanamura, [0071]). This seems to imply that whatever alignment is performed, is performed before the device enters the first chamber 21 at an aligner located elsewhere. Therefore, contrary to the presently amended claims, Tanamura does not seem to contemplate performing an alignment and/or realignment between a substrate and a mask in the context of the disclosed manufacturing apparatus.

Martin is relied on merely for the purported disclosure of a first alignment mechanism for aligning a mask, having openings corresponding to the predetermined pattern, to the substrate and for detachably attaching the mask (30,32) and the substrate (64). (See, Office Action, pg. 8). Accordingly, Martin fails to cure the deficiencies of Imahashi and Tanamura as discussed above.

For at least the reasons discussed above, Imahashi, Tanamura and Martin fail to render obvious amended independent claim 11, and claims 14-16 and 18-19 that depend therefrom, even assuming that they are properly combinable.

Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of claims 11, 14-16 and 18-19 be withdrawn.

The Office Action rejected claims 15, 16 and 18 under 35 U.S.C. §103(a) as being unpatentable over Imahashi in view of Tanamura, Martin and in view of U.S. Patent Publication No. 2001/0006827 to Yamazaki et al. ("Yamazaki"). Yamazaki is relied on for the purported teaching of an attachment fixture including a magnet plate for attaching the substrate and the mask and the mask is formed of a magnetic material. (See, Office Action, pg. 3). Therefore, Yamazaki fails to cure the deficiencies of Imahashi, Tanamura and Martin, as discussed above.

Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of claims 15, 16 and 18 be withdrawn.

The Office Action rejected claim 19 under 35 U.S.C. §103(a) as being unpatentable over Imahashi in view of Tanamura, Martin, Yamazaki as applied to claims 11, 14-16 and 18 above, and further in view of U.S. Patent No. 6,214,631 to Burrows et al. ("Burrows"). Burrows is relied on for the purported disclosure of a shadow mask positioned in a first position over a substrate, where a first process is performed on the substrate through the shadow mask and then the shadow mask is moved to a second position over the substrate and measured relative to the first position. (See, Office Action, pg. 11). For at least the reasons given above, Burrows fails to cure the deficiencies of Imahashi, Tanamura, Yamazaki and Martin.

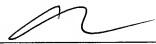
For at least the reasons discussed above, Imahashi, Tanamura, Yamazaki, Martin and Burrows fail to render obvious claim 19, even assuming that they are properly combinable.

Accordingly, Applicants respectfully request that the 35 U.S.C. §103(a) rejection of claim 19 be withdrawn.

The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing.

Respectfully submitted,

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